

REMARKS

Applicant acknowledges with appreciation, the indication that claims 14, 15, 17 and 18 contain allowable subject matter. Claims 9-21 are currently pending, with claims 9, 13 and 19 being the independent claims. Claims 9-13 and 17-20 have been amended. The amendments to claims 9, 11, 13 and 19 clarify the wording of the claims, and are cosmetic in nature. No new matter has been added. Reconsideration of the above-identified application, in view of the following remarks, is respectfully requested.

Objection to the Drawings

The Examiner has objected to the drawings for allegedly failing to show every feature of the claimed invention specified in the claims. According to the Examiner, the drawing fails to show “the heat exchanger being serially arranged behind said fans as per claims 12 and 20, the at least one power section and said at least one control section are physically separate from one another as per claim 16, the control section comprising elements which are arranged in said at least one power section as per claim 17, and the at least one power section comprises elements which are arranged in said at least one control section as per claim 18”.

With respect to “the heat exchanger being serially arranged behind said fans as per claims 12 and 20”, applicant has amended claims 12 and 20 to recite that the “heat exchanger is arranged serially downstream of said fan”. This amendment is supported by the figure which shows the direction of the air flow of the fan. Withdrawal of this objection to the drawing is therefore in order.

As for the “at least one power section and said at least one control section are physically separate from one another” as recited in dependent claim 16, paragraph [0019] of the

specification as originally filed states that “[i]t is particularly advantageous to provide partition walls 6, 7 between the power section 3 and the control section 2, these partition walls extending as far as the common printed circuit board 4 and dividing the housing 5 into two regions which are closed off from one another”. The partition walls 6, 7 are shown in the figure (see reference designations 6, 7). These partition walls provide the physical separation between the power section 3 and the control section 2. Therefore, the drawing does indeed show the recitations of dependent claim 16. Withdrawal of this objection to the drawing is therefore in order.

Regarding “the control section comprising elements which are arranged in said at least one power section” as recited in dependent claim 17 and “the at least one power section comprises elements which are arranged in said at least one control section” as recited in dependent claim 18, paragraph [0022] of the instant specification states that “it is also entirely possible to place elements which are typical of the power section in the region of the control section ... [and that it] is equally possible to place components which are typical of the control section in the power section”. Moreover, dependent claims 17 and 18 have each been amended to recite that the elements are arranged in a region of the at least one power section or at least one control section. The figure shows elements that are arranged in a region of the power control section and/or the control section, such as close to the partition 6. Therefore, the drawing does depict the recitations of dependent claims 17 and 18. Withdrawal of these objections to the drawing is also in order.

Rejection of the Claims Under 35 U.S.C. §102(b)

Claims 9-13, 16 and 19-21 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 6,651,761 (“*Hrovat*”). For the following reasons, reconsideration and withdrawal of these rejections are respectfully requested.

Independent claim 9 relates to a cooling system for an electrical power unit of an electrically operated vehicle, wherein the electrical power unit has at least one power section and at least one control section. Independent claim 9 specifically recites “a first cooling circuit arranged to primarily cool said at least one control section” and “a second cooling circuit arranged to primarily cool said at least one power section”. Accordingly, independent claim 9 requires two cooling circuits for the electrical power unit of an electrically operated vehicle.

Hrovat fails to disclose two cooling circuits for one electrical power unit of an electrically operated vehicle.

Hrovat discloses “a system and method to control the coolant temperature of two independent cooling loops of a fuel cell vehicle by adjusting system pump speed, fan speed and radiator bypass valve position” (see Abstract). Specifically, *Hrovat* (col. 3, lines 5-7) states that “[t]wo independent cooling circuits (loops) are used to cool a fuel cell system 42 and all other liquid cooled components on the vehicle”. According to *Hrovat*, the cooling circuits “include a high temperature cooling loop 20 and a low temperature cooling loop 22” (see col. 3, lines 7-9). *Hrovat* (col. 3, lines 9-8) expressly states that “[t]he fuel cell stack and several associated system components can be cooled with the high temperature cooling loop 20”.

Hrovat (col. 3, lines 13-22) additionally explains that “[t]he low temperature cooling loop 22 has a low temperature cooling loop heat exchanger also known in the art as a radiator (“low temperature cooling loop radiator”) 28 with an inlet and an outlet to allow exit and entry of

coolant and can be used to thermally manage some auxiliary vehicle components such as auxiliary fuel cell system 42 components, an electric drivetrain 24 and its power management hardware 26. The low temperature cooling loop 22 can also have a pump (not shown) to move coolant through a plurality of conduits from the low temperature cooling loop radiator 28 and through the various cooled components”.

Hrovat thus teaches a cooling system comprising a first cooling circuit 22 having a first heat exchanger 28 that is designed and arranged, *inter alia*, to supply coolant to a power management unit 26 and an electric drivetrain 24, where both of these units may possibly each comprise a power section and a control section. In addition, *Hrovat* teaches a second cooling circuit 20 having a second heat exchanger 32 that is designed and arranged to supply coolant to a fuel cell system which may also comprise another power section and another control section.

However, *Hrovat* fails to teach or suggest a cooling system in which two separate cooling circuits are used to cool the power section and the control section of the same power unit, as recited in independent claim 9. Rather, *Hrovat* teaches an arrangement in which the power section and control section of the power management unit 26 and the electric drive train 24 are cooled with the same, single cooling circuit 22. Moreover, *Hrovat* teaches an arrangement in which the power section and control section of the fuel cell system is cooled with another cooling circuit 20.

A core aspect of the claimed invention, as also described at paragraph [0023] of U.S. Patent Application Publication number (i.e., the instant application), is the use of two different cooling circuits that have different coolant temperatures to cool the same power unit such that the sensitive control section is cooled down to a lower temperature. Simultaneously, the higher temperature generated by the power section is fed into a cooling circuit at a second and higher

coolant temperature. *Hrovat* teaches that the power section and control section of the same power unit is cooled by the same cooling circuit at the power management hardware. Consequently, the electric drivetrain and the fuel cell system of *Hrovat* provide no reason or basis for the skilled person to modify the system disclosed therein to achieve applicant's claimed system. Rather, *Hrovat* clearly teaches away from the cooling systems of independent claim 9.

The foregoing teachings and deficiencies of *Hrovat* are indeed consistent with the subject matter of dependent claim 14, which has been indicated to contain allowable subject matter, where the Examiner has indicated that *Hrovat* fails to teach or suggest arranging at least one power section and at least one control section on a common circuit board such that they can be cooled by two cooling circuits. *Hrovat* thus clearly fails to disclose, teach or suggest independent claim 9.

Independent claim 13 is directed to a power system for electrically operated vehicles and includes limitation similar to the above limitations of claim 9. Accordingly, independent claim 13 is allowable for the same reasons as is independent claim 9. Moreover, *Hrovat* also fails to teach or suggest the corresponding method recited in independent claim 19.

Reconsideration and withdrawal of the rejection under 35 U.S.C. §102(b) are therefore in order, and a notice to that effect is respectfully requested.


In view of the patentability of independent claims 9, 13 and 19, dependent claims 10-12, 14-18, 20 and 21 are also patentable over the prior art for the reasons set forth above, as well as for the additional recitations contained therein.

Based on the foregoing remarks, this application is in condition for allowance. Early passage of this case to issue is respectfully requested.

Should the Examiner have any comments, questions, suggestions, or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,
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